

App. No. 09/560,269  
Amendment dated August 30, 2006  
Reply to Final Office Action of June 30, 2006

**Listing of claims:**

1. (Currently amended) A computer-implemented method for collecting information relating to execution of an application, the method being executed on a computer, the method comprising:

determining a set of probe locations in the application, wherein determining a set of probe locations includes: the set of probe locations comprises:

identifying a probe location at a beginning of a calling function,

identifying a probe location at an end of the calling function,

identifying a probe location at a beginning of a first called function,

identifying a probe location at an end of the first called function,

identifying a probe location ~~at a position~~ in the calling function at the beginning of a call to the first function where the calling function calls the first called function,

identifying a probe location ~~at a position~~ in the calling function at the end of the call to the first function where the first called function returns after execution,

identifying a probe location at a beginning of a second called function ~~when the first called function calls the second called function, and~~

identifying a probe location at an end of a second called function, and

eliminating the probe location at the end of the first called function and eliminating the probe location at the end of the second called function when the first called function calls the second called function and when the second called function returns to the calling function, ~~a probe location at a position in the calling function where the second called function returns after execution,~~

~~wherein a pair of probe locations produces redundant information;~~

~~eliminating one member of the probe location pair; and~~

~~inserting probes at the remaining probe locations in the application such that data collected relating to the execution of the application produces non-redundant information.~~

Claims 2-4 (Cancelled).

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5. (Currently amended) The method of claim 1, wherein a first probe is inserted and configured to collect an address of the first called function, an address of the second called function, a first stack pointer, and a first time indicator, and further wherein a second probe is inserted and configured to collect the address of the second called function, a second stack pointer, and a second time indicator.

6. (Cancelled).

7. (Currently amended) The method of claim 1, wherein a first probe is inserted and configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is inserted and configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

8. (Currently amended) The method of claim 1, further comprising:  
identifying a block of code to which execution of the application is directed upon occurrence of an error; and  
~~inserting~~ identifying a first probe location at a beginning of the identified block of code and a second probe location at an end of the identified block of code.

9. (Currently amended) The method of claim 8, wherein ~~the~~ a first probe is inserted in the first probe location configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and ~~the~~ a second probe is inserted in the second probe location ~~is configured~~ to collect the address of the block of code, a second stack pointer, and a second time indicator.

10. (Currently amended) The method of claim 1, further comprising inserting probes in the probe locations that were not eliminated using the inserted probes to collect the information relating to the execution of the application.

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11. (Original) The method of claim 10, further comprising analyzing the collected information.

12. (Currently amended) A computer-readable storage medium having an application including computer-executable instructions, the computer-executable instructions comprising: A computer-implemented method for collecting information relating to execution of an application, the method being executed on a computer, the method comprising:

determining a set of probe locations in the application, wherein determining a set of probe locations includes: the set of probe locations comprises:

identifying a probe location at a beginning of a calling function,  
identifying a probe location at an end of the calling function,  
identifying a probe location at a beginning of a first called function,  
identifying a probe location at an end of the first called function,  
identifying a probe location at a position in the calling function at the beginning of a call to the first called function where the calling function calls the first called function,  
identifying a probe location at a position in the calling function at the end of the call to the first function where the first called function returns after execution,  
identifying a probe location at a beginning of a second called function when the first called function calls the second called function, and  
identifying a probe location at an end of a second called function,  
eliminating the probe location at the end of the first called function and eliminating the probe location at the end of the second called function when the first called function calls the second called function and when the second called function returns to the calling function, a probe location at a position in the calling function where the second called function returns after execution,  
wherein a pair of determining whether probe locations produces redundant information;  
eliminating a probe location when a probe location produces redundant information one member of the probe location pair;

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inserting probes at probe locations that are not eliminated ~~the remaining probe~~  
~~locations in the application;~~

collecting non-redundant information relating to the execution of the application  
using the inserted probes; and

analyzing the collected information.

13. (Currently amended) The computer-readable storage medium ~~method~~ of claim 12, wherein a first probe is configured to collect an address of the first called function, an address of the second called function, a first stack pointer, and a first time indicator, and further wherein a second probe is configured to collect the address of the second called function, a second stack pointer, and a second time indicator.

14. (Currently amended) The computer-readable storage medium ~~method~~ of claim 12, wherein a first probe is configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

15. (Currently amended) The computer-readable storage medium ~~method~~ of claim 12, further comprising:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code,

wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

16. (Currently amended) A computer-implemented method for collecting information relating to execution of an application, the method being executed on a computer, the method

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~~comprising: A tangible computer readable medium having an application including computer-executable instructions, the computer-executable instructions comprising:~~  
determining a set of probe locations in the application, wherein ~~determining a set of probe locations includes: the set of probe locations comprises:~~

identifying a probe location at a beginning of a calling function,  
identifying a probe location at an end of the calling function,  
identifying a probe location at a beginning of a first called function,  
identifying a probe location at an end of the first called function,  
identifying a probe location at a position in the calling function at the beginning of a call to the first called function where the calling function calls the first called function,

identifying a probe location at a position in the calling function at the end of the call to the first called function where the first called function returns after execution,

determining whether the first called function is one of: an internal called function and an external called function, and

eliminating the probe location in the calling function at the beginning of the call to the first called function and eliminating the probe location in the calling function at the end of the call to the first called function when the first called function is an internal called function.

~~a probe location at a beginning of a second called function when the first called function calls the second called function, and~~

~~when the first called function calls the second called function and when the second called function returns to the calling function, a probe location at a position in the calling function where the second called function returns after execution,~~

~~wherein a pair of probe locations produces redundant information;~~

~~eliminating one member of the probe location pair; and~~

~~inserting probes at the remaining probe locations in the application such that data collected relating to the execution of the application produces non-redundant information.~~

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Claims 17-19 (Cancelled).

20. (Currently amended) The method ~~computer-readable medium~~ of claim 16, wherein a first probe is inserted and configured to collect an address of the first called function, ~~an address of the second called function, and~~ a first stack pointer, and a first time indicator, ~~and further wherein a second probe is configured to collect the address of the second called function, a second stack pointer, and a second time indicator.~~

21. (Cancelled).

22. (Currently amended) The method ~~computer-readable medium~~ of claim 16, wherein a first probe is inserted and configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is inserted and configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

23. (Currently amended) The method ~~computer-readable medium~~ of claim 16, further comprising having further computer-executable instructions for:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

~~inserting~~ identifying a first probe location at a beginning of the identified block of code and a second probe location at an end of the identified block of code.

24. (Currently amended) The method ~~computer-readable medium~~ of claim 23, wherein ~~the a~~ first probe is inserted and configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and ~~the a~~ second probe is inserted and configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

25. (Currently amended) The method ~~computer-readable medium~~ of claim 16, further comprising: having further computer-executable instructions for inserting probes in the probe

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locations that are not eliminated and using the inserted probes to collect the information relating to the execution of the application.

26. (Currently amended) The method computer-readable medium of claim 25, further comprising: having further computer-executable instructions for analyzing the collected information.

27. (Currently amended) A tangible-computer-readable storage medium having an application including computer-executable instructions, the computer-executable instructions comprising:

determining a set of probe locations in the application, wherein determining a set of probe locations includes: the set of probe locations comprises:

identifying a probe location at a beginning of a calling function,

identifying a probe location at an end of the calling function,

identifying a probe location at a beginning of a first called function,

identifying a probe location at an end of the first called function,

identifying a probe location at a position in the calling function at the beginning of a call to the first called function where the calling function calls the first called function,

identifying a probe location at a position in the calling function at the end of the call to the first called function where the first called function returns after execution,

determining whether the first called function is one of: an internal called function and an external called function, and

eliminating the probe location in the calling function at the beginning of the call to the first called function and eliminating the probe location in the calling function at the end of the call to the first called function when the first called function is an internal called function.

a probe location at a beginning of a second called function when the first called function calls the second called function, and

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~~when the first called function calls the second called function and when the second called function returns to the calling function, a probe location at a position in the calling function where the second called function returns after execution;~~  
~~wherein a pair of probe locations produces redundant information;~~  
~~eliminating one member of the probe location pair; and~~  
inserting probes at the remaining probe locations in the application that are not eliminated;  
collecting non-redundant information relating to the execution of the application using the inserted probes; and  
analyzing the collected information.

28. (Currently amended) The computer-readable medium of claim 27, wherein a first probe is configured to collect an address of the first called function, ~~an address of the second called function~~, a first stack pointer, and a first time indicator, ~~and further wherein a second probe is configured to collect the address of the second called function, a second stack pointer, and a second time indicator.~~

29. (Previously presented) The computer-readable medium of claim 27, wherein a first probe is configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

30. (Original) The computer-readable medium of claim 27, having further computer-executable instructions for:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code,



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wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

31. (Currently amended) A computer system comprising a processor that is arranged to execute computer-executable instructions, the computer-executable instructions comprising:  
 determining a set of probe locations in the application, wherein determining a set of probe locations includes: ~~the set of probe locations comprises:~~

identifying a probe location at a beginning of a calling function,  
identifying a probe location at an end of the calling function,  
identifying a probe location at a beginning of a first called function,  
identifying a probe location at an end of the first called function,  
identifying a probe location at a position in the calling function at the beginning of a call to the first function ~~where the calling function calls the first called function,~~  
identifying a probe location at a position in the calling function at the end of the call to the first function ~~where the first called function returns after execution,~~  
identifying a probe location at a beginning of a second called function ~~when the first called function calls the second called function, and~~  
identifying a probe location at an end of a second called function, and  
eliminating the probe location at the end of the first called function and  
eliminating the probe location at the end of the second called function ~~when the first called function calls the second called function and when the second called function returns to the calling function, a probe location at a position in the calling function where the second called function returns after execution,~~  
~~wherein a pair of probe locations produces redundant information;~~  
~~eliminating one member of the probe location pair; and~~  
~~inserting probes at the remaining probe locations in the application such that data collected relating to the execution of the application produces non-redundant information.~~

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Claims 32-34 (Cancelled).

35. (Currently amended) The computer system of claim 31, wherein a first probe is inserted and configured to collect an address of the first called function, an address of the second called function, a first stack pointer, and a first time indicator, and further wherein a second probe is inserted and configured to collect the address of the second called function, a second stack pointer, and a second time indicator.

36. (Cancelled).

37. (Currently amended) The computer system of claim 31, wherein a first probe is inserted and configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is inserted and configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

38. (Currently amended) The computer system of claim 31, further configured to execute computer-executable instructions for:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

~~inserting~~ identifying a first probe location at a beginning of the identified block of code and a second probe location at an end of the identified block of code.

39. (Currently amended) The computer system of claim 38, wherein ~~the a~~ a first probe ~~is configured~~ is inserted in the first probe location to collect an address of the block of code, a first stack pointer, and a first time indicator, and ~~the a~~ a second probe is inserted in the second probe location ~~is configured~~ to collect the address of the block of code, a second stack pointer, and a second time indicator.

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40. (Previously presented) The computer of claim 31, further configured to execute computer-executable instructions for inserting probes in the probe locations that are not eliminated using the inserted probes to collect the information relating to the execution of the application.

41. (Previously presented) The computer system of claim 40, further configured to execute computer-executable instructions for analyzing the collected information.

42. (Currently amended) A computer system comprising a processor that is arranged to execute computer-executable instructions, the computer-executable instructions comprising determining a set of probe locations in the application, wherein determining a set of probe locations includes: the set of probe locations comprises:

identifying a probe location at a beginning of a calling function,

identifying a probe location at an end of the calling function,

identifying a probe location at a beginning of a first called function,

identifying a probe location at an end of the first called function,

identifying a probe location at a position in the calling function at the beginning of a call to the first called function where the calling function calls the first called function,

identifying a probe location at a position in the calling function at the end of the call to the first called function where the first called function returns after execution,

determining whether the first called function is one of: an internal called function and an external called function, and

eliminating the probe location in the calling function at the beginning of the call to the first called function and eliminating the probe location in the calling function at the end of the call to the first called function when the first called function is an internal called function

a probe location at a beginning of a second called function when the first called function calls the second called function, and

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~~when the first called function calls the second called function and when the second called function returns to the calling function, a probe location at a position in the calling function where the second called function returns after execution;~~  
~~wherein a pair of probe locations produces redundant information;~~  
~~eliminating one member of the probe location pair; and~~  
inserting probes at ~~the remaining probe~~ locations in the application that are not eliminated;  
collecting non-redundant information relating to the execution of the application using the inserted probes; and  
analyzing the collected information.

43. (Currently amended) The computer system of claim 42, wherein a first probe is configured to collect an address of the first called function, ~~an address of the second called function~~, a first stack pointer, and a first time indicator, and further wherein a second probe is configured to collect the address of the second called function, a second stack pointer, and a second time indicator.

44. (Previously presented) The computer system of claim 42, wherein a first probe is configured to collect an address of the calling function, an address of the first called function, a first stack pointer, and a first time indicator, and further wherein a second probe is configured to collect the address of the first called function, a second stack pointer, and a second time indicator.

45. (Previously presented) The computer system of claim 42, further configured to execute computer-executable instructions for:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code,

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wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

Claims 46-51 (Cancelled).